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NITRATE DEPOSITS IN THE UNITED STATES

A PRESS bulletin of the U. S. Geological Survey states that nitrate deposits in many parts of the United States have been examined during the last two years by the survey. The importance of finding a natural supply of nitrates within our own borders has given incentive to this work and has directed widespread public attention to the subject.

Prospectors in many places have raised great hopes by finding good surface showings of these salts, but investigation has seemed to force the acceptance of a general adverse judgment as to their value—a judgment that has been adopted with the greatest reluctance by all concerned. Incidentally, advantage seems to have been taken of the situation to promote certain stock-selling enterprises, even after the evidence as to the worthlessness of the deposits became sufficient to satisfy any competent judge, so that one is forced to question either the good faith of the promoters or their practical judgment.

As a result of careful study of these deposits, and particularly of evidence gathered on recent visits to prospects in different parts of the country, Mr. Hoyt S. Gale, a geologist of the Federal Survey, has submitted the following general summary, which is commended to the consideration of those who are tempted to invest their money in such enterprises.

Fine specimens of practically pure nitrate of soda and nitrate of potash (saltpeter) have been found in many parts of the country, and careful investigation of specimens and localities seems to warrant some definite conclusions as to the practical value of these deposits, especially to those who are invited to spend their money in investigations like those the survey has already made.

The nitrate salts occur as crusts or films on the faces of ledges; as seams—most of them thin, though some are fairly thick—in crevices of shattered rock; and as deposits filling spaces in porous rocks at and near the surface or extending to a depth of several feet. They are naturally preserved in recesses in the rock ledges, where they are sheltered from the dissolving action of rain, snow water, or even

mist. They are found in lava ledges, in beds of volcanic tuff or ash, and in limestone and sandstone. Their existence or preservation is apparently dependent rather on the shattered or porous nature of the rock than on its kind or composition. These deposits, which have been referred to as cave or ledge deposits, are of essentially the same type wherever found, although they vary considerably in details of occurrence.

The incrustations are found not only on the faces and fractures of ledges of solid rock, but some of them form layers or cementing constituents in the loose soil and rock breccia at the bases of cliffs, or lie in places protected from the weather. Some samples obtained from both these sources are rich in nitrate salts, and analyses of such materials will bear little significant relation to the actual character or content of the mass of the rock of which the ledge is formed. It appears that the deposits are surficial—that is, they do not extend far into the mass of the rock—and the nitrate salt found is insignificant in amount.

Nitrates are found in unusually large quantities in some soils and in some clay hills, particularly in southern California. These deposits have been examined by many persons and the general conclusion reached has been unfavorable to the idea of their practical utilization. The nitrate content, although unusually large as compared with the content of ordinary soils, probably does not average over 1 or 2 per cent. of the soil or clay, and it is very doubtful whether the material could be worked commercially.

Any one who is not convinced by the judgment already reached as to these deposits and who is determined to devote his time or money to their further exploration should do so with full knowledge of the evidence already in hand and should not be led into such a venture by more or less misleading representations. The Geological Survey will always be glad to make an examination of any samples submitted.

AGRICULTURE OF THE HIDATSA INDIANS

A DOCTOR'S thesis of unusual practical value is that of Dr. Gilbert L. Wilson submitted in